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The Forester

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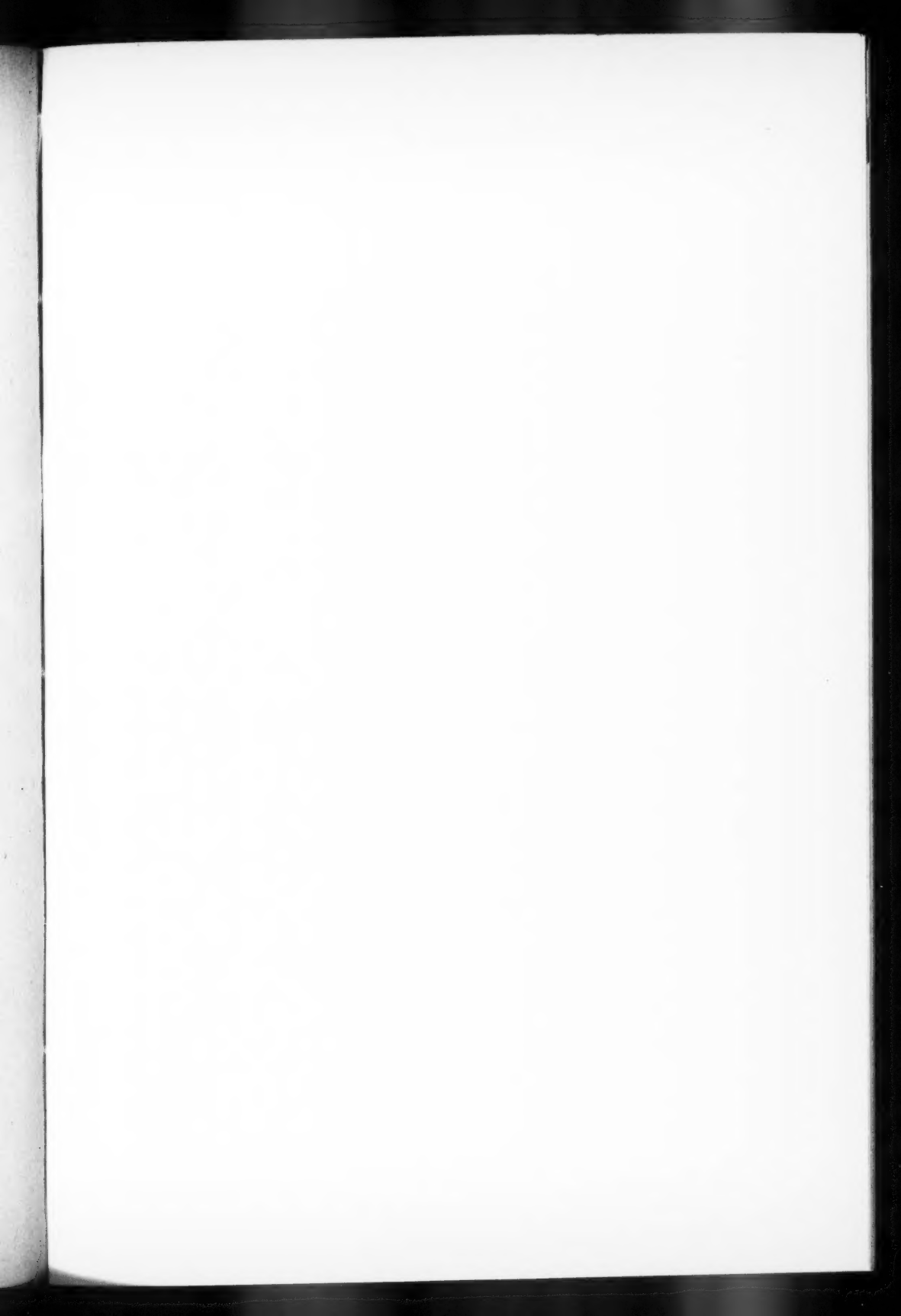
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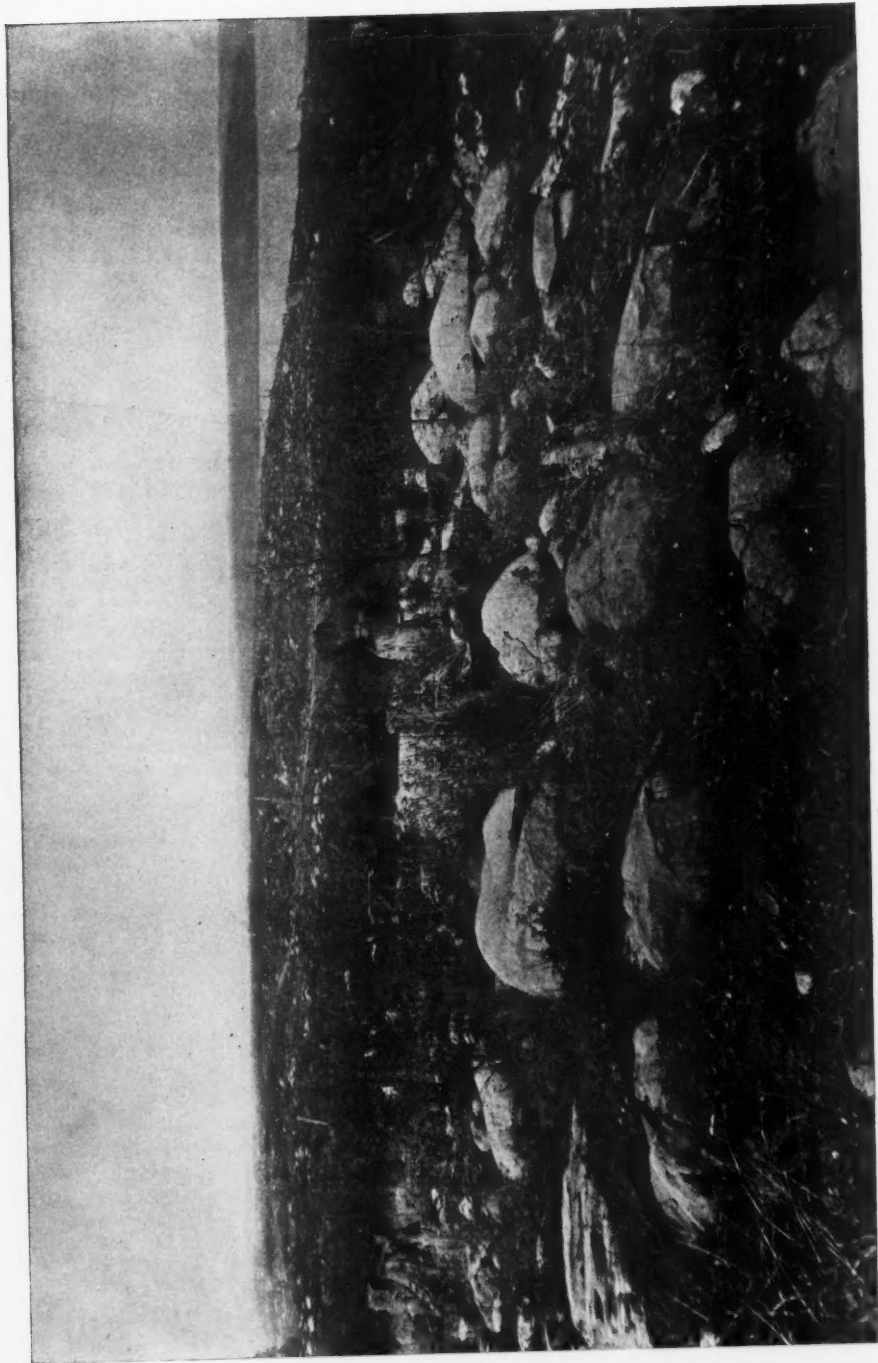
TABLE OF CONTENTS

CUT-OVER LAND IN MINNESOTA	Frontispiece
FOREST PROBLEMS IN MICHIGAN	CHARLES W. GARFIELD 255
	<i>Prest. Michigan Forestry Commission</i>
THE LEGISLATIVE OUTLOOK IN WISCONSIN.....	ERNEST BRUNCKEN 259
THE MINNESOTA FORESTRY PLAN	JUDSON N. CROSS 263
	<i>Prest. Minnesota State Forestry Board</i>
CUTTING, BURNING AND FIRE PROTECTION	H. B. AYRES 266
	<i>U. S. Geological Survey</i>
EDITORIAL:	
Regarding the White Pine North. Recent Progress in Minnesota. Possibilities of Forestry in New Hampshire. Importance of Forests to New Hampshire	268
CORRESPONDENCE:	
The Spreading of Timber Areas and the Sprouting of White Pine Seed.....	270
NEWS, NOTES AND COMMENT:	
From the Hon. Wayne MacVeagh. The New Crow Creek Forest Reserve. The Struggle for Water in the West. Endorsed by the National Business League. Stealing Wood after a Fire. Forestry in Spain. Forests and the New England Landscape. Lumber Worth more in the Trees. Recent Canadian Legislation	271
REVIEW OF AMERICAN AND FOREIGN PERIODICAL LITERATURE.....	276
RECENT PUBLICATIONS.....	279

To Members of the Association . . .

THE AMERICAN FORESTRY ASSOCIATION will hold a meeting in Washington, on the morning of Wednesday, December 12. The meeting will be primarily a business meeting. The Board of Directors will make its annual report and officers will be elected for the ensuing year. Members who are in the neighborhood of Washington are urged to be present. The place of meeting will be announced later.





CUT OVER, NON-AGRICULTURAL PINE LAND, NOW USELESS. MINNESOTA.

Courtesy of Chief Fire-Warden of Minnesota.

THE FORESTER.

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FOREST PROBLEMS IN MICHIGAN.*

BY CHARLES W. GARFIELD.

President of the Michigan Forestry Commission.

It may be a matter of some interest to the members of our association to know what we are doing in Michigan looking toward the solution of our forestry problem. The first movement was made by the State Horticultural Society when I was secretary twenty or more years ago. We had a forestry program arranged for one of our annual meetings, and there was brought out, through some able papers, the best judgment of some of our most progressive and public-spirited citizens upon the necessity of prompt measures to increase the interest in forest preservation with reference particularly to the preservation of conditions that would promote the horticulture of our State.

For a number of years following this meeting, some phase of forestry was discussed annually in connection with the meetings of the State Horticultural Society. The agitation resulted finally in a bill, largely the work of Dr. W. J. Beal of the Agricultural College, which was presented by one of the vice-presidents of the society after he became a member of the Legislature. This bill was modified somewhat and became a law. It provided for the organization of an independent Forestry Commission, and named such Commission, the names being those of the Michigan Board of Agriculture. A small appropriation was made for expenses, and the Board of Agriculture selected Dr. Beal and myself as directors. We did what we

could to awaken an interest throughout the State, held a convention which was a great success, and issued a bulletin; and this was practically the end of the first skirmish, for the Legislature refused to appropriate any further money, and discontinued the Commission. A little more than two years ago, a few of us who were still interested in the work, somewhat hopefully took the preliminary steps for the organization of a body to consist of representatives of the Board of Regents of the Michigan University and the Board of Agriculture of the Agriculture College, as a voluntary commission to open again the question of legislation, hoping to revive the Forestry Commission. We held a number of very interesting meetings. Professor V. M. Spalding of the University was made chairman of this gathering, and I. H. Butterfield of the Agricultural College was made secretary. The final result of the deliberations of this voluntary commission was the formulation of a bill which was presented to our last Legislature, somewhat modified by that body, and finally passed.

The following is the text of the law.

AN ACT, To provide a permanent Forestry Commission for the State of Michigan, to define its powers and duties and to provide for expenses.

The People of the State of Michigan enact:

Section 1. A commission to consist of three members is hereby constituted, one the Commissioner of the State Land Office, and two to be chosen by the Governor by and with the advice and consent of the Senate; one of whom shall hold his office for the term of two years and one

* Read at the meeting of the American Forestry Association in New York, June 26th.

for four years. The appointment shall date from July first, eighteen hundred ninety-nine. The term of the Commissioner of the State Land Office as a member of this commission shall be coextensive with his term as Commissioner of the State Land Office. At the expiration of the terms of the appointive members their successors shall be appointed, each for a term of four years. Such commission shall elect one of its members president, another member secretary. It shall maintain its office and records in the Capitol at Lansing in the State Land Office, and shall serve without compensation, but shall be entitled to traveling and other expenses while on business relating to the work of the commission. Also all necessary cost of postage, stationery and printing and other incidental expenses: Provided, That the secretary may be paid such amount as the commission may determine, not to exceed three hundred dollars per annum: And Provided Further, That all accounts shall be audited by the State Board of Auditors.

Sec. 2. It shall be the duty of such Forestry Commission to institute inquiry into the extent, kind, value and condition of the timber lands of the State; the amount of acres and value of timber that is cut and removed each year, and the purposes for which it was used; the extent to which the timber lands are being destroyed by fires, used by wasteful cutting for consumption, lumbering, or for the purpose of clearing the land for tillage. It shall also inquire as to the effect of the diminution of timber and wooded surface of this State in lessening the rainfall and producing droughts, and the effects upon the ponds, rivers, lakes and the water power and harbors of the State and affecting the climate and disturbing and deteriorating natural conditions. It shall also examine into the production, quantity and quality of second growth timber and note and report upon all facts, improvements and changes in reference thereto, also as to the condition, protection and improvement of denuded, stump, swamp and overflowed lands, and what means it may deem expedient in carrying into full effect the intent and purpose of this act. The commission shall recommend to the Legislature, in the year nineteen hundred one, within ten days from its opening, their findings, in the form of a bill or bills to carry out the objects for which this commission is appointed.

Sec. 3. It shall be the duty of the Commissioner of the State Land Office to furnish the commission any and all data concerning lands of all classes in which the State is directly or indirectly interested, that may be valuable in formulating a method of managing State lands suitable for the growing of forests. He shall also as far as possible aid the commission in its investigations and render all the assistance in his power in preparing a report which shall embody a definite forestry policy for the State of Michigan.

Sec. 4. Upon the recommendation of the said Michigan Forestry Commission the Commis-

sioner of the State Land Office shall withdraw from sale two hundred thousand acres of lands known as State Tax Homestead lands and Swamp lands belonging to the State, and withhold the same until after the adjournment of the Legislature after such reservation. The commission shall be authorized to receive by deed to the State, from the owners, any tracts of land which in its judgment may be suitable as forest reserves, to be kept by the State: Provided, however, That this act shall not be construed so as to effect in any manner the rights or interests of any person to or in any lands which such person may have acquired previously to the day on which this act shall go into effect.

Sec. 5. Said commission shall make an annual report to the Governor, on or before the first day of December in each year, of such facts and statistics as it may deem of public interest, and recommend such legislation as may be necessary for the preservation and restoration of the timber and forestry of the State, or any portion thereof, and cause such number of reports, not exceeding two thousand copies, to be printed each year for public use and distribution, which report shall be printed by the Board of State Auditors. The expense of the commission, as provided in section one of this act, shall be paid on vouchers certified by the president of the commission to the Auditor General and paid by the State Treasurer, out of the general fund, upon the warrant of the Auditor General: Provided, That not more than two thousand dollars shall be expended by the State in any one year under the provisions of this act.

Under a provision of this law the Governor of the State appointed as members of the Commission, Mr. Arthur Hill of Saginaw, and Charles W. Garfield of Grand Rapids, the third member being the Commissioner of the Land Office, Mr. William A. French, who became a member of the Commission by virtue of his office. The Commission organized by the election of Mr. Garfield as president and Mr. French as secretary. Mr. Hill has been absent from the State a greater portion of the time since the organization of the Commission, and I have been reaching, as far as my time would permit, for data upon which to base recommendations for future legislation. I have kept a running fire in the newspapers of the State, and our friends of the press with hearty unanimity, grasp any facts that are brought out by the Commission and are glad to give them to the people. By this means we are awakening a good deal of interest in the work of the Commission.

I have communicated with the women's clubs of Michigan, and they are taking up the matter in earnest. From lumbermen and land owners and woodsmen I have been gathering testimony with regard to the most desirable line of action, and I have come to the conclusion that we are more in need of expert counsel upon the legal side of the forestry problem than we are of expert assistance in the business of forestry. Beyond any question we must straighten out some of our legal difficulties before the State can properly take hold of the business of growing forests with any safety. The State now owns ostensibly more than three million acres of land that have come into its possession as the result of delinquent taxes. There is another million on its way, but the titles to these lands procured by the State in this way are very imperfect, and it cannot afford to take the chance of growing forests upon them until the titles cannot be successfully attacked.

There has not, in the history of the State, been such flagrant thieving upon State lands as during the last year. Timber has been stolen by the millions of feet, not by poor men who take an occasional tree, but by corporations which have cleared up large areas, and, under our trespass laws, have afterward settled with the State, this being a cheaper way to get timber than by buying the land; so that the Commission has become satisfied that our trespass laws must be modified and perfected and enforced in a different way before there will be any safety in growing new timber. If the state is unable to take care of its own now, we can never expect to awaken a sufficient interest in forestry to secure legislation that will provide for growing more forests to be the prey of trespassers.

Then we have no method of controlling forest fires. While there have been more acres devastated by thieving than by fires during the last generation, the destruction by the fire element has been enormous, and we have no system which gives us any protection either upon State lands or upon those held by individuals; so that we shall have to frame legislation with reference to protection from fire before we go into the forestry business in earnest.

Then there is the problem of taxes. I found in my preliminary investigation of the conditions in Michigan that I was at once in the midst of the great problem of taxation, as affecting timber lands. The men who own large tracts of growing timber are actually driven to cutting off the timber and getting their money out of it because of the excessive local taxation—made especially heavy on the lands of non-resident owners. The theory of the assessors is not without reason, for they claim that with the demand for timber, these lands will actually sell for more money than adjacent farm lands. On the other hand, there is a stronger argument in favor of arranging taxation so as to induce the owners of tracts of forest to maintain them as forests in the interests of the very lands which are contiguous and given up to agriculture and horticulture. In some cases on lands upon which timber has matured and been cut off by lumbermen, assessments have been maintained at the same figure as before the timber was removed, and this has resulted in the land's going back to the State for taxes. The owners maintain that when they are so exorbitant they cannot afford to keep the lands for growing timber again, even with the best of promise in the young growth. On the other hand, the assessors say these owners have reaped a great harvest, and unless the assessments are maintained upon their lands, the burden of continuing the expenses of the government will be thrown upon agricultural lands which barely afford the owners a living. But no matter what the theory of either party may be, the fact stares us in the face that under existing laws the State is acquiring tremendous areas of land, immature timber is being slaughtered, and nothing has as yet been accomplished to stay the hand of the destroyer.

The attention of the Commission has been called to a remarkable lack of foresight shown by the owner of a large tract of timber land near Grand Rapids. This tract contains something over four thousand acres, and what to-day is probably the finest block of hardwood timber in the State of Michigan. The timber has been

sold under a contract which provides that everything shall be cleared from the land within the next six years. The tract is remarkable for its fine growth of young wood, and the soil is a rich clay loam, so that this has great promise in it. There is no doubt but if the timber should be taken off gradually and with care, the tract would pay ten per cent. interest on a large valuation, still growing more valuable as an investment for a long period of time. The adjacent residents are very much agitated over this method of disposing of this tract, but of course are helpless in the matter. The influence of the woods upon the agriculture and horticulture of the vicinity can scarcely be estimated, especially as fruit growing is a leading industry in this region. I presume their owner, who lives somewhere out in New York, has never heard of the offer of the Department of Agriculture to assist in the management of tracts of timber upon modern forestry methods that shall insure a continuous and valuable investment. The chances are that when this tract of land shall be turned into money, it will be dissipated or invested so as to add very little to the general value in the vicinity where it is invested. One thing is certain, that Michigan will be a great loser; the owner of the land will not be a gainer, and as a piece of mismanagement the case is an object lesson that should have influence to awaken among people a higher sense of obligation with reference to timber holdings. It is not a great satisfaction to the State of Michigan to have some wealthy lumberman who has become enriched through our forest heritage, invest his means in some benevolent enterprise in a distant city or State. A man's conscience may be eased somewhat, but such an act does not meet our view of the obligation. No man who has attained great wealth from Michigan's timber has yet seen fit to endow a

piece of forest land. This would seem to be the most logical method of showing an appreciation of the conditions which have assisted to the accumulation of wealth.

Our Forestry Commission will try to obtain some statistical information that, at any rate, will be valuable in connection with the rapid removal of the trees from this fine tract. Our plans are not matured but we shall try, either through the Michigan University or the State Experiment Station, to arrange for a continuous line of observation with reference to temperature, air moisture, winds, crops, streams and springs, that shall extend for at least six years beyond the time when the timber shall have been entirely removed. In this way we shall hope to have some accurate information that will be of value in the prosecution of our work and in the awakening of public opinion to the important effects of timber areas on the industries of the region in which they are situated.

In gathering information the Commission finds it difficult to get an unprejudiced opinion or observation from woodsmen, because they have always been on the wrong side of the question from our standpoint; and, on the other hand, if we import somebody to make the observations for us, be he ever so expert, he is handicapped by his lack of knowledge of the country and its conditions, and progress in securing information by this means must necessarily be very slow. We are trying to work both ways, and hope, in whatever progress we make, to take advantage of the experience in other States and other countries, and shall be glad to utilize the valuable assistance of the Department of Agriculture and of the American Forestry Association, and of the counsel of public-spirited citizens who have special knowledge that can be useful in the solution of our problem.

THE LEGISLATIVE OUTLOOK FOR FORESTRY IN WISCONSIN.*

BY ERNEST BRUNKEN.

Although the problem of legislation for the establishment of an adequate forestry policy differs in detail in the various States of the Union, yet the essential conditions are so nearly alike in all parts of the country, that an outline of the present state of affairs in Wisconsin will not be without interest to citizens of other commonwealths. It is with this confidence that I have accepted the invitation to present to the Association a bird's-eye view of the outlook for forestry legislation in my home State.

It is a little humiliating to confess, at the very outset, that a State like Wisconsin, which is second to none in regard to the economic importance of its forest interests, is far behind several other States equally situated, as far as their legislative recognition is concerned. Although it was one of the earliest to appoint a commission with purely advisory powers, no definite step to protect its forests was ever taken beyond the enactment of a wholly insufficient fire warden law. The first commission of inquiry submitted a report to the Legislature as early as 1867. It consisted of a somewhat amateurish discussion of the climatic and physical effects of forest destruction, some well-meant advice on the subject of planting shade trees, and a description of the principal native forest trees. It made no propositions for legislative action. For nearly thirty years thereafter, no laws relating to forest matters were passed, except those designed to further the ordinary destructive lumbering. But in 1895 a law was adopted making town supervisors and road superintendents fire wardens *ex-officio*. The towns were restricted, however, from expending more than \$100.00 a year in fighting forest fires. Even in this first attempt at legislation, the important principle was recognized

that there must be a central authority to supervise the execution of this law. But the means taken for this purpose were utterly inadequate. The chief clerk of the Land Office was made the State Forest Warden, and all local fire wardens were to report to him on fires in their districts. As a matter of fact, few ever did report, and not many more of these *ex-officio* fire wardens ever paid the slightest attention to forest fires, unless these burned up their own premises, and not always then.

The Legislature of 1897 took a few very small steps in advance. It provided for the appointment of special fire wardens, instead of conferring the duties of that office on officers elected for entirely different purposes; and it authorized the chief clerk to spend a small amount for the posting up of warning signs. Still, the chief clerk, being kept very busy with other duties, was unable to exercise even a faint supervision, and a majority of the fire wardens paid no more attention to preventing or extinguishing fires than the *ex-officio* wardens had done before them. This state of a desuetude by no means innocuous still prevails with regard to the forest fire law of Wisconsin.

At the same session of the Legislature, a law directing the appointment of another commission of inquiry was adopted. The new commission obtained the advice and cooperation of the United States Forestry Division. One of the results of this cooperation was the excellent account of the forest condition of the northern half of the State, by Prof. Filibert Roth, with which most members of this Association are no doubt familiar. To the Legislature of 1899 this commission submitted a bill which, if adopted, would have put Wisconsin in advance of every other State in regard to the treatment of its forest resources. A determined effort was made to push the bill through the two Houses, but it failed

*Read at the meeting of the American Forestry Association in New York on June 26.

on the last day of the session for reasons quite unconnected with its merits.

The vicissitudes which this measure underwent before the Legislature may be interesting as an illustration of the complications which in the nature of things must arise when an attempt to enact a law of this nature is made. Friends of forestry reform, unacquainted with the methods of legislative business, are apt to imagine that when a good bill has been introduced and the reasons for its enactment have been effectively laid before the committee to which it is referred the work is done. As a matter of fact, this is but the beginning, and that this is so does by no means reflect discredit either on the understanding or the integrity of members of the Legislature. To understand the history of the forestry bill of 1899, a few words on certain conditions prevailing in Wisconsin must first be submitted.

Wisconsin still possesses some 400,000 acres of land which was granted to the State by the general Government under various laws. In addition there are within the limits of the State, outside of Indian reservations, about an equal number of acres of government land. The State lands are but a small remnant of what the State once owned. It has been the policy up to this date, to dispose of these lands as rapidly as purchasers could be found, and at prices considerably below their real value. For a number of years, the transactions of the land department were of considerable magnitude and required a considerable number of clerks and other employees. For some time however, these transactions had shown a steady decrease, and the feeling was wide-spread that an employment in the land office was a sinecure, given by leading politicians as reward for political services. When the Legislature of 1899 met, it was universally expected that an attempt would be made to practically abolish the land department, and naturally the beneficiaries of the old system were ready to fight for self-protection.

The forestry bill was proposed to still further reduce the work to be done in the Land Office, by suspending the sale of State lands, pending an investigation as to what

parts of it were to be included in a permanent State forest reserve. It was anticipated, therefore, that on the whole those legislators, who were disposed to cut down the establishment of the land office, would look favorably on the forestry bill, while the friends of the Land Office employees could not be reckoned on.

The promoters of the bill succeeded in having the measure referred not to one of the regular standing committees, but to a special joint committee of both Houses, composed of its known friends. The chairman of this committee was a prominent lumberman, one of the most influential men in the Senate, and an energetic and well-informed friend of forestry. Although, in the light of after-events, this reference to a special committee proved a tactical mistake the reasons for doing so were undoubtedly valid ones. It was unknown what the attitude of the members on this question would be, and to let it go to a standing committee would have meant incurring the risk of having it pigeon-holed by a hostile committee, even though a majority of the members of the Legislature might be in its favor.

Under the rules every measure carrying an appropriation must, after it has been favorably reported by the committee in charge, go to the joint committee on claims. It being the business of this committee to keep a check on expenditure, many a meritorious measure suffers death at its hands, because the funds in the State treasury are not limitless. For reasons which need not be discussed here the Claims Committee of 1899 was unusually liberal in passing appropriations. This was true especially during the early part of the session, and if the forestry bill had gone to this committee early it would have passed without difficulty and this would have made its becoming a law practically certain.

But here became apparent the drawbacks to the policy of having a special committee. The members of it were kept very busy by the work of the various standing committees to which they belonged. The chairman had difficulty in getting his special committee together.

When it finally reported the session had progressed pretty far and the Claims Committee had become a little scared at its own liberality. So when the forestry bill, with its call for an annual expenditure of \$15,000, came before it they refused to recommend the appropriation. Thereupon the bill was amended so as to devolve a portion of the work on the Land Department and cut the appropriation down to \$5,000 a year. In this shape the Claims Committee recommended it for passage and the Senate adopted it without a dissenting vote.

Up to this time, the only opposition the bill had encountered, aside from the reluctance of the Claims Committee to pass further appropriations, had come from friends of the old Land Department. This opposition had not shown itself upon the surface, but in secret certain individuals busied themselves by telling members that the proposed forest department "would be an elephant on the hands of the State, and would eat up millions of dollars." The amended bill, by giving work to the Land Department, and therefore furnishing plausible reasons for retaining most of its employees, was well calculated to pacify this kind of opposition. But by the time the bill, after adoption in the Senate, reached the Assembly, the closing days of the session had come. Then came a message from the governor, calling attention to the fact that the appropriations already passed by the Legislature were in excess of the estimated income of the State. This made the passage of the forestry bill highly improbable. Still its friends did not give up the fight. During two hours, on the last day of the session, they fought for it on the floor of the Assembly, but at the final vote the nays had it by a small majority.

Among the lessons to be learned from the history of the forestry bill of 1899, one of the most important is this: that there is no longer much danger of opposition to the principle that it is the duty of the State to provide for the permanency of forests by appropriate legislation, even to the extent of going into the business of conservative lumbering. Ten years ago,

such a proposition would have met with not a little hostility and ridicule. It would have been called impracticable, socialistic, and un-American. In 1899, not a single member of the Legislature but admitted the desirability of such legislation, with the exception of one gentlemen who thought that forest fires were a good thing because they made it easier to clear the ground for farming. It is said that this statesman is engaged in selling sand hills to innocent foreigners and laborers from the cities, on the pretense that they are agricultural lands. Even those who voted against the bill did so avowedly on the ground of expediency for the time being.

Even less opposition than within the Legislature is to be met with among the people of the State. Of course there is a great deal of indifference, and not a little misunderstanding of the aims and objects of forestry reform. In a state situated like Wisconsin, where the question of maintaining a water supply and preventing over-erosion is of subordinate importance, the great body of people cannot be expected to feel the same direct interest in forest preservation as for instance in Southern California, where the existence of agriculture is dependent on the maintenance of the mountain forests. In Wisconsin, the class most directly interested are those engaged in forest industries, and manufacturing enterprises deriving their raw material from the woods. It is very gratifying to state that as a general rule men of this class are staunch friends of improved forestry, and some of the most energetic promoters of this cause are among the great lumbermen.

Of course it cannot be expected that entire unanimity should exist as to the best means of reaching the desired end. In particular, the policy of placing considerable areas of forest land under the management of the State is apt to encounter objections from the residents of the counties in which these forests will be necessarily located. They fear on the one hand that the reservation of these tracts will hinder the progress of settlement, and on the other hand they desire to see all the land in private hands, so that it may be

taxed for the support of local government and improvements. Both these objections are, to be sure, based on imperfect knowledge, and short-sighted enough. Yet they are made in good faith by men of intelligence, standing and influence. They must be overcome by practical reasoning and the spread of correct information.

Perhaps the most serious problem to be solved in Wisconsin as well as its neighboring States is what shall be done with the immense areas of denuded timber lands, which are now growing into vast wildernesses of worthless scrub, subject to the ravages of fire and a constant menace to the standing timber adjoining. There are no physical obstacles to the reforestation of these tracts. But the financial and political difficulties are enormous. Most of these lands are still the property of the lumber companies which harvested the timber. Not a little of it, however, has been sold for taxes and bid in by the counties. These do not know what to do with such lands, and from time to time sell them to speculators at nominal prices, sometimes for less than a dollar a "forty." Now there can be no question that much of the land of this kind is fairly good for agricultural purposes, although it cannot be compared in quality with the hardwood lands where the timber is still standing. But the greater portion is barren sand, just enough to bear a fair crop of Pine, but unfit for field crops after the slight accumulation of humus is exhausted. To persuade ignorant settlers to locate on such lands and try to make them into farms, is little short of a crime.

The great mass of the people of northern Wisconsin are well-meaning, upright folk, and they know well enough that much of this land is unfit for settlement. But as it is not possible to draw a hard and fast line between the fit and unfit tracts, the temptation is great to find invariably that the really unfit land is just beyond the boundaries of the next township. So the settlers continue to take up these sand barrens, with disastrous results to themselves, and

no permanent benefit to the community. The only feasible way of putting these lands to the use for which they are adopted, and by which they can ultimately yield a profit, would be to place them in the hands of the State for rational forest management. But this will require the sinking of a large amount of money in an enterprise that cannot yield appreciable returns for a number of decades. If the State is to acquire title by purchase, a very considerable amount of cash will be required, or else payment must be made in bond or scrip. The latter would seem the most economical means, but unfortunately the State of Wisconsin is prohibited, by its constitution, from incurring an indebtedness except for a few narrowly defined purposes. A number of owners of large tracts of land of this class have expressed their willingness to cede their holdings, which are practically valueless to them, to the State if it will take proper care of them. It is probable that the solution of the problem will be approached from this direction. But in order to make this possible, some legislation will be needed, and for that purpose the friends of forestry in Wisconsin look forward to the meeting of the Legislature during the coming winter.

There is the best possible reason to believe that a bill for the establishment of a rational forestry system will be passed by the next Legislature. It will be devised substantially on the lines laid out in the bill that failed of passage at the last session, with certain modifications required by the rise of a new factor since the Legislature adjourned. The State University of Wisconsin has now under consideration a plan for the establishment of a forestry school, as nearly as possible on the model set by the schools at Cornell and Yale. For this purpose the express authority and aid of the Legislature will probably be sought, and it is obviously proper to bring the State Forestry College into as close relations with the forest department, as the difference between administrative and educational functions will permit.

THE MINNESOTA FORESTRY PLAN.*

BY JUDSON N. CROSS,

President of Minnesota State Forestry Board.

At the January, 1896, annual meeting of the Minnesota State Forestry Association, probably the oldest in the country, the writer suggested a plan for an inexpensive forestry system, under State control, which won the instant adoption and earnest and unflagging support of the Association. The press gave the scheme most generous indorsement, and urged the passage, by the Legislature, of the bill which was drawn on the lines suggested to the Association. All of the allied societies and boards, agricultural, horticultural, etc., discussed the plan fully, and by resolutions urged the Legislature to crystallize the suggestions into a law. The Legislature of 1897 considered the bill, the Lower House passed it, and it was recommended for passage by the Committee on Forestry in the Senate, but there was not time to reach it. All the features of the plan were adopted except one, which the writer believes vital to the success of the plan and which is referred to below. The Legislature of 1899, passed the law as passed by the Lower House in 1897. In 1897 the members of the Legislature, or rather some of them, had to be urged, and committees had to be convinced, but by 1899, a great educational work had been done through a system devised by the late J. O. Barrett, the then enthusiastic Secretary of the State Forestry Association, and after his death ably carried forward by Geo. W. Strand, his successor.

The popular educational system, inaugurated by Mr. Barrett, has brought such excellent results, that it can be commended to every Forestry association in the country.

An article on some forestry subject, written for plain people, was furnished, gratis, to about eighty weekly papers, mostly in Minnesota, but to some in northern Iowa and western Wisconsin, every

two weeks. These articles were read by the farmers, and discussed. The daily papers kept the subject before the people in editorials and in news articles, as well as in scientific articles about the principles of forestry, so that when the Legislature of 1899 convened, the members had become posted and educated about forestry, and understood the importance to the State, and to the next generation, of their creating the beginning at least of a system of forest preservation.

Our State still has thousands of pioneers who had to destroy the forests to make homes, and to these an expensive system of reforestation could not be presented. Such persons must be persuaded by arguments, which the articles furnished, to look ahead for the benefit of their children.

In a general way the northern half of Minnesota, except the Red River valley, on the eastern side, is or was a timbered region, as was the northeasterly third of the southern half. East of the Mississippi River and north of the Northern Pacific Railroad were the great Pine forests. The Pine forests are often found on sandy or rough lands. In the northern part of the State there is a great deal of ridgy, rocky and stony land. Much of the so-called cut-over lands, especially the Pine lands from which the Pines have been removed, is practically worthless for agricultural purposes; yet throughout all this region, there are interspersed large and small bodies of good agricultural land, which are being rapidly settled by hardy farmers, who prefer the woods over the prairies for homes. A Pine forest, first cut over, or logged, then burnt over, is a most desolate region.

The writer's suggestions to the State Forestry Association, the principal features of which, with one exception, have been enacted in the law creating the State Forestry Board and designating State forests were,

* Read at the meeting of the American Forestry Association in New York on June 26th.

1. That any person having denuded or other lands, worthless for agricultural purposes, deed them to the State, if the Board of County Commissioners acting as a county board of forestry recommend them and the State Forestry Board accept them; that the State protect these lands from fire, and exempt them from taxes, as State lands, and to a certain inexpensive extent reseed them with useful and profitable varieties, depending, however, principally on the small timber which might be left and on natural reseedling.

The principal expense would be the protection from fires, which the State, to save its wealth in its forests, ought to undertake at all events; and the loss of taxes to State, county and towns.

2. (Omitting many necessary minor provisions) that when an income is realized, it should be divided into three parts to be distributed as follows:

(a) One-third to be retained by the State to reimburse it for fire protection and loss of taxes, of which one-quarter should go to the State, one-half to the county, and one-quarter to the town.

(b) One-third to go to any educational system or institution in the State which the donor might designate by the deed of conveyance, by a separate recorded instrument, or by will; but if he failed to designate, to go then to the common school system (3/4), and the State University (1/4).

(c) One-third to go to the donor and his heirs or those designated by will—and possibly his assigns, unless it might be good public policy to make it inalienable and exempt from debt as an *incentive*—but this one-third to be limited to, say, seventy-five years, and then this third to go to the educational institution or system designated by the donor for the *b* third.

The plan contemplated the creation of small permanent State forest tracts all over the State, using only tracts not desirable for agricultural purposes (except around the sources of water courses), and not the creation of vast pleasure parks. Thus forests would be reproduced near those who would use their products. The Hon. Ignatius Donnelly was a member of the

1897 Legislature, and the leading anti-monopolist, and fearing that to give the donor and his heirs one-third of the income for a limited period (which would not be for more than two crops of timber at most) would favor the wealthy Pine land owners, he opposed this feature of the bill.

The friends of the measure, among them Ex-Governor John S. Pillsbury, the father of the State University and a large Pine land owner (who said he desired to give the whole income to the University, keeping nothing for himself), thought it would be better to get the system started than to stand out for the *incentive* clause. Ex-Governor Pillsbury cited the case of Dartmouth College, in his native State, which now draws a nice income from the timber on a tract of mountain land in the northern part of New Hampshire, which, when it was given to the College, was considered worthless.

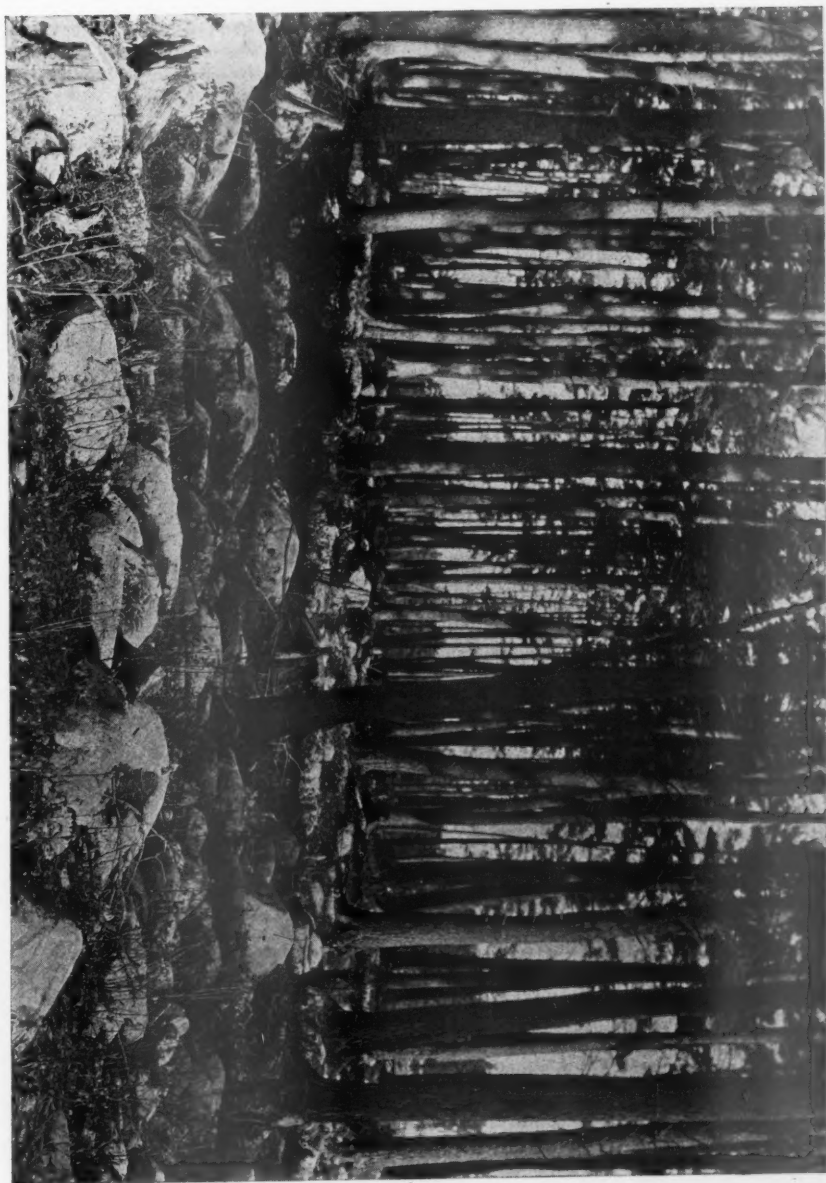
The 1899 Legislature followed the bill passed by the Lower House in 1897, under the Donnelly trimming.

The writer believes that the plan cannot be fully successful until the State offers the owners some adequate inducement to deed their lands to it. He has always thought that this incentive of giving the donor and his heirs a part of the profits from the lands for one or two generations, was essential to the plan's success; and although it may be that the denominational colleges may induce such gifts in time he does not expect that the State will receive donations of lands, except from a few wealthy and benevolent men. Neither does the writer believe that a harmful monopoly would be created by holding out so reasonable an inducement to the owners of cut over Pine lands, worthless for agriculture.

The Legislature can turn over to the Board for administration on forestry principles any of its timbered school and University lands and even Itasca park.

Some people have already tendered some lands to the Board and a start has been made. The Board is conservative and expects to feel its way—go slowly.

The four years which have elapsed since the plan was proposed have been most beneficial years to the whole State as



PRIMEVAL WHITE PINE ON NON-AGRICULTURAL LAND IN MINNESOTA.

Courtesy of Chief Fire Warden of Minnesota.

regards forestry. The incessant discussions by the press, by the allied associations interested in agricultural matters, by commercial clubs, chambers of commerce, boards of trade, the Board of University Regents, college trustees, medical associations, the various women's clubs, the Minnesota National Park and Forestry Association, of which Dr. Cyrus Northrop, President of the State University, is President, the dean and professors of the Agricultural College, the Legislature, its individual members, and the great lumbermen have wrought an educational work and change in Minnesota greater, I believe, than that in any other State. All of these

bodies, boards and associations, and the people generally, have become alive to the necessity of preserving what can be preserved of our great wealth in our forests, and of keeping forests on the sandy, rough and rocky lands in the interests of our children.

I believe the people of Minnesota will, from the splendid educational campaign of the past four years, go on and work out the problems of the preservation and regrowth of their forests, which so largely concern their agricultural, manufacturing and commercial interests. The writer has reason to be grateful for the results of his crude suggestions made to the Association.

CUTTING, BURNING AND FIRE PROTECTION.*

By H. B. AYRES,

United States Geological Survey.

It may seem time that agitation about cutting, burning, and fire protection should cease but the waste has not ceased. Perhaps if it were better known there would be less of it.

Our difficulty in understanding the amount of waste lies in the differences between the different regions. One accustomed to the moister climate of northern New England, where Spruce and hardwoods thrive and fires are rather exceptional, finds himself surprised at the general burning of stump lands and the frequent heavy losses by fire in the untouched coniferous forests of the drier Lake region and the often parched western mountains. One judging of what should be done in the drier regions by what he sees in the East is apt to make mistakes. We have been too apt to think that a forest, being a forest, is simply a forest; but we learn in time that there are variations and complications in forests, and upon the understanding of their differences their successful management depends.

Lumbermen in moving from Maine to

* Read at the meeting of the American Forestry Association in New York, June 26th.

Michigan, have made their plans in Michigan as they had in Maine. "We'll cut this over, take out the best of it, and in a few years have a nice second growth when prices will be better." But the fires surprised them, and they learned to cut clean the first time and let the land go.

It became customary to burn the tops (I mean to set fire freely in the stump land) to protect the remaining timber. "Let her go" has been the word ever since, and she has gone.

In moving on westward to Minnesota, a climate even more subject to drought and fire was found and a forced rush began in order to get the timber cut before the fire killed it. The amount of timber thus killed no one can know. Professor Winchell in 1878 "estimated that annually ten times as much Pine is thus destroyed in the State (Minnesota) as is cut by all the mills."

Most of such losses have passed without estimate. The fractions that are known amount to a great deal. The U. S. Geological Survey during the past season's work has found fourteen townships in which 836,000,000 feet of White and Norway Pine have been lost by fire. This to-

day would have been worth about three and one-half million dollars on the stump.

Farther west on the eastern slope of the Rocky Mountains in the Lewis and Clark Forest Reserve 1,000 square miles out of the 1,600 have been so severely burned that only a few trees have survived and the mountain sides are grey with dead trees.

Cut-over lands are of course more liable to fire.

In Minnesota about 90% of the stump lands have been overrun by fire which has killed most of the trees left and destroyed seeds, seedlings, and seed bed with all prospect of a near future forest crop.

The prevention of this waste lies not so much in putting out fires as in preventing their start.

The fires set to burn tops are unnecessary. (Do not misunderstand me. There is no such thing in practice among lumbermen as burning tops without injuring the remaining forest; by "burning tops" lumbermen mean setting fire in the winter's slashing and letting it burn all over.) Much of the clearing that is done by fire is unnecessary, but these cases cannot be decided at a distance. They must each be studied and decided upon according to the varying circumstances.

"During the past summer Mr. Morris K. Jesup made a valuable and instructive addition to the museum of the (N. Y. Botanical) Garden. It consists of a block representing the wood of each of the different North American trees. The specimens are duplicates from the great collection of North American Forestry preserved in the American Museum of Natural History. *

"The collection has been temporarily installed in the east hall of the economic museum, in the space previously set aside for woods and timbers, and their products. Each specimen is provided with a label indicating, first, the common or local name of the tree, second, the name of the species, and third, the geographical distribution. The distribution of our trees is interesting from several standpoints, and this collection as it is now labelled emphasizes the following facts which seem worthy of notice:

The method of prevention is the puzzle. The best state of affairs would be to have every one in the woods in a proper state of mind regarding fire; but we cannot hope for this yet.

The present system in Minnesota is good, but it is too far in advance of the times. It is too ideal. It depends too much upon the will of people who are often interested in setting fires and the jurisdiction is too much under local influence. Local interests in preventing fires are often small, frequently the residents are in favor of burning the country over regardless of the non-resident owners, or of State or federal ownership, or revenue.

There is urgent need of more thorough keeping of the fire laws and this can be done only by a patrol above local influence. Such a patrol should not antagonize but should be able to overrule improper, especially the flagrant, misuses of fire. The patrol of the Lewis and Clark Forest Reserve has proved the efficiency of the system adopted for the forest reserves. It only needs good men to carry it out.

Let that system be modified to suit localities where individual as well as public interests exist and the next step in forest protection will be made.

"The specimens represent about 66 natural families, and 500 species, which fall into about 173 genera. A few of the species are generally distributed over nearly the whole of North America, but the great majority are considerably restricted in their geographical ranges. Leaving out of consideration such species as are widely distributed, we find that the area east of the 100th meridian produces fully twice as many different kinds of trees as the area to the west of it. There may be many more trees in the northern regions than in the southern from the standpoint of quantity, but the south surpasses the north in the variety of species; the southwest possesses over twice as many different kinds of trees peculiar to itself as the northwest, while there are but seven species peculiar to the northeast as against the one hundred and eighty-one peculiar to the southeast.—
Journal of the N. Y. Botanical Garden.

The Forester,

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NOVEMBER, 1900.

No. 11.

In this issue of the FORESTER appear four articles which deal with the problems of the White Pine regions in Michigan, Minnesota, and Wisconsin. In these states forestry is much needed, but before it can be practised to any extent a great deal of legislation will be necessary. Some laws now on the statute books are such as to discourage, not to facilitate the maintenance of the forests. These must be repealed or amended and new ones must be passed. The public must be educated to a sense of the needs of the case in order that timber stealing and fires may be checked. In these three States the details of the difficulties which Forestry Commissions and Associations are thus trying to settle are slightly different. But at bottom the problems are so much alike that even in their differences they are instructive. They are problems in tax legislation, protection against fire, and the management of State lands which each State must take hold of by itself. Until a few years ago they were entirely new to the country, but sooner or later every State in the Union will have to deal with them. The way in which the Lake States are grappling with them is most instructive and their progress is being watched with interest.

Recent Progress in Minnesota.

This month come two fresh assurances of the progress which is being made by the friends of forestry in Minnesota. One, a letter from an enthusiastic but practical friend of the Minnesota Park project living in St. Paul, reports plainly that forestry is being better appreciated daily and that the interest in it is growing rapidly. The other, even more welcome, is the news reported in a number of clippings that in Duluth, on October 19th, two men were convicted of starting fires in the timber on the Chippewa Indian Reservation in Itasca county.

It was alleged in this case that the defendants—one of them had been prominent as a lumberman in the region for some years—had set the fire in order to create dead and down timber which might then be secured from the Indians under the "dead and down" timber act. For some time there has been good reason to believe that this kind of timber stealing has been far from uncommon in northern Minnesota. Delegates of the State Federation of Women's Clubs who visited the park country some months ago, found trees which showed signs of having been fired intentionally, and were assured by residents that such was often the case. The State Fire Warden has shown that he also is of this opinion, for though he makes no definite charges he assumes several times in his last report, either expressly or by implication, that the malicious firing of timber in order that the "dead and down" timber Act may apply to it is not uncommon. Hitherto, however, no case has been brought into court. Considering that the penalty is three years imprisonment, or a fine of \$5,000, this successful prosecution ought to have a good effect.

It will be remembered that the Chippewa Indian Reservation in which the burning was done is within the proposed boundaries of the Minnesota Park.



Possibilities of Forestry in New Hampshire.

Although it is easy to say that the owners of woodland in New Hampshire have been neglecting their opportunities

woefully, it is hard to see the nature of their mistakes until the reasons for them have been taken into account. The farm wood lots, except where they contain groves of good-sized White Pine, heavy stands of hardwood or Maple orchards, are little cared for; but the course of events during the last two generations shows many reasons for this. In the first place the original forest, which the New Hampshire farmer cut to good profit, disappeared from all but the White Mountain region years ago, and since then many townships have had no connection whatever with profitable traffic in lumber. The couple of dozen or more trades which used to be carried on in every community, when country towns had little communication with the rest of the world, have also died out, and with them have disappeared a once steady local demand for wood and woodwork of many sorts. High hills and bad roads have made the hauling of cord wood to a market or to a railroad difficult and costly in many places. Railroads and the supply of cheap coal have altered the demand for fuel even in the villages. For decades, too, the tide of life has drawn strongly away from the rural districts, and in the parts of the State where farms have been deserted, firewood has been all too cheap. So that it is not strange that for a long time the New Hampshire farmer has considered his woodlot simply as a part of the farm from which fire-wood may be cut when needed, but for which he has otherwise no use.

But although the indifference to forests is no more to be wondered at in New Hampshire than in many other parts of the country, this does not necessarily imply that their neglect is not shortsighted and mistaken; and even disregarding for a time the non-agricultural regions, and the considerations touching the water supply, and attractions to the summer tourist, is not such really the case? An illustration will answer most clearly. Groves of White Pine or of useful hardwoods, like Oak or Maple, when well grown, are considered the most valuable part of many of the farms on which they are to be found. From almost any such grove may be seen

woods which, though similar in all conditions of soil and environment to that in which the good timber is found, contain only an irregular, weedy growth in which trees of a dozen different kinds are interfering with each other and getting along but poorly themselves. When the reason for this difference is sought it turns out that it is unnecessary to assign any cause for the relative poorness of the second stand of trees which it would not have paid to get rid of. Indeed the difference is no other than that usually to be found where things are left to luck; and the neglected condition of the woodlot is without warrant. For where as many useful trees grow as freely as in New England, a little sowing or planting in places where seed does not fall; a judicious use of the ax to remove undesirable growth at the right time; and care and economy in cutting wood for use on the farm; will often make the difference in fifteen or twenty years between a stand of trees which is of little use, and one which adds a good amount to the value of the farm and pays its taxes. Even in remote townships it is as great a mistake to act as if the first growth supplies the only marketable wood, as to assume that a good second growth will more than occasionally grow up without care or attention. The truth is that almost everywhere in New Hampshire and other parts of New England the conditions are so favorable to forest growth that a small outlay of labor and money will make the woodlot on almost any farm increase in value at the same time that it yields its owner a good per cent. on what it was originally worth. This being the case there is no reason why a field should go to wood exactly as it goes to "waste." It is quite wrong that this census definition of all farm land not either "tillage" or "pasture" should apply so literally.

Importance of Forests to New Hampshire.

But turning now to the effect of the forest on the water supply and the beauty of the country, it is clear almost at a glance that though no State has taken less care of her forest interests than New Hampshire, none could profit more by attending to them as

they deserve. New Hampshire's prosperity is no longer founded on her agriculture, but on industries to which the continued existence of her forests is of the first importance. The factory towns along the Merrimac—which has been called the main artery of the State's economic life—and on some of the other streams in the lower part of the State, are the communities which are flourishing and growing in population. To their well being it is of the greatest importance that the flow of the rivers should be regular, and should not go on increasing its fluctuations as during the last three or four years. In other regions the plentiful presence of the summer visitor, who has of late been bringing New Hampshire between seven and ten millions a year, is the one condition of prosperity; and this summer business, which centers very largely around the White Mountain region, would be wiped out entirely if either fire or wasteful lumbering should sweep the forests from the mountain sides generally, as they already have in several regions now well-

nigh deserted. Finally, the lumber business itself is one which the State would not willingly see disappear. But if the State is not to come near seeing it do this, if it is to see the lumbermen go on happily and prosperously without working harm to other industries it must regulate their operations. With this end in view it will frequently be enough to point out to timber owners, what some of them have already discovered, that methods of cutting which perpetuate the forest are really to their best interest. In other cases moderate legislation will be all that is needed. But in a few places the State will undoubtedly have to take charge of the forest lands herself. This may seem a grave step, and the task of awakening public interest in forestry generally may seem a heavy one, but when manufactures, summer business, and in the long run lumbering, are all vitally interested, and when the agricultural regions are all so well supplied with wood and so perfectly fitted for its production, New Hampshire cannot afford to remain officially inert any longer.

CORRESPONDENCE.

The Spreading of Timber Areas and the Sprouting of White Pine Seed.

TO THE EDITOR OF THE FORESTER.—Facts and truths from nature are what are needed in forestry. The article by Charles E. Bessey in the October number of the FORESTER is useful because it is full of facts found by observing nature. In general I had observed the same facts in the West and some corresponding ones in New England. In our section Pine seed seldom sprouts and produces trees on a close grass sod, and this is especially true if the ground is hard and dry. I have known land to moss over till the Pine seed would grow in the moss, but weeds, blueberry bushes, sweet fern, hardhack and similar growths in open lands generally form the beds in which the young Pines start. One of the most beautiful groves of White Pine within my knowledge is on land covered with

sweet fern when I was a boy. Plowed land, in the vicinity of Pine trees, left to weeds is a good bed for Pines to start in. I have sometimes wished for blueberry or similar seed to sow on land near Pines so as to form a bed in which the Pine seed would sprout and grow.

I concluded years ago that fire was the great reason why the western prairies were treeless, and that the thick laminated bark of the Post Oak and of our Pitch Pine caused those trees to stand the fire better than others, and consequently were the trees respectively found on western prairie and northern sand plains. I thought the same kind of bark had much to do with the Hard Pine of our Southern States.

Let us preach that forests increase or equalize rainfall, change the climate, pre-

vent freshets and drying up of streams when we know such to be the facts. It is extremely unfortunate "to know a great deal that is not so." I dislike to have to unlearn so much as I have had to even from official reports.

One of the great difficulties in getting land holders to plant the seed of timber trees is the fact that so much of the cheap land is covered with Grey Birch, Alders, Red Cherry and other weed trees. Last week I looked over four unoccupied adjoining farms on a highway, only five or six miles from a large village and two miles from a railroad station, all excellent land for White Pine and Oak, but they were largely covered with young trees nearly all of worthless kinds. These with their two quite good sets of buildings could be bought, I presume, for about two dollars per acre. One of them containing three

hundred acres with quite good buildings had been offered for five hundred dollars. It is worth much more than this to grow Pine and other timber but for the bushes. The great fact is stated in your October number on page 249 as a quotation from *The Lumberman's Review*. It "is a demonstrable fact that by treating the tree as a crop, planting it under proper conditions and harvesting" at proper time, "a permanent and adequate return from the investment may be secured and the integrity of the forest preserved." This is a vastly important fact yet in little New Hampshire the United States Census Report of 1880 says that there are 116,000 acres of land lying idle, producing neither farm or forest crop. O, the neglected opportunities!

J. D. LYMAN.

EXETER, N. H., Oct. 24, 1900.

NEWS, NOTES AND COMMENT.

From the Hon.
Wayne MacVeagh

The following letter from the Hon. Wayne MacVeagh to the Secretary of Agriculture, explains itself:

WASHINGTON, D. C., Sept. 18, 1900.

DEAR MR. SECRETARY: I have received a notice from Mr. Newell stating that you had suggested my name as one likely to be interested in the work of the Forestry Association, and suggesting my becoming a member of it. I therefore take the liberty of sending the enclosed check for life membership through you to Mr. Newell, as it gives me an opportunity of saying to you that I appreciate the great value of the movement in this country for the preservation of what forests are left us and for the renewing of those which have been unwisely destroyed. I know of hardly any work likely to be more fruitful of advantage to the future of our country. Sincerely yours,

WAYNE MACVEAGH.

HON. JAMES WILSON.

The New Crow
Creek Forest
Reserve.

On the 10th of October President McKinley signed a proclamation setting apart a new national forest reserve in Wyoming to be known as the Crow Creek Forest Reserve.

This reserve contains 56,320 acres, or about two and one-half townships, and is situated in Albany County at the head of the stream from which the reserve takes its name. Crow Creek, of which the upper drainage basin is thus reserved, is the principal source of water supply to Fort D. A. Russell and to the city of Cheyenne. It also supplies water for irrigating purposes to a number of ranches—but only to a limited extent, for at present it is necessary in summer time to close the irrigating ditches in order that the supply for the city of Cheyenne may not run short.

The Crow Creek Forest Reserve is about 8,000 feet above sea level. The land which it contains is poor and almost everywhere quite unfit for agriculture. Only about two and one-half of the eighty-eight sec-

tions formed within the reserve have been settled on. From most of the land the forest was cut about thirty years ago when the Union Pacific was constructed. A fire also burned over the region at that time. Only the small amount of old timber which remains is merchantable. In the rest of the reserve reproduction has been but slow and scanty. It is of great importance that this new growth should not be left without protection.

The Struggle for Water in the West. The "Struggle for Water in the West" is the title of an article in the November *Atlantic*, in which Mr. William E. Smythe considers the importance of having the water supplies treated as public property and saved from the selfish enterprise of private interests. Mr. Smythe begins by saying:

"Mount Union in Wyoming might be called the Mother of Civilization in the western half continent where water is King. The melting snows of this peak in the Wind River Range, south of Yellowstone Park, give birth to three rivers which, in the course of their long journeys to the sea, control the industrial character of a region which will ultimately be the home of more people than any nation of Europe, and probably of twice as many people as now dwell within the United States. These rivers are the Missouri, the Columbia, and the Colorado. The first waters the eastern slope of the Rocky Mountains, including the Great Plains; the second, all of Idaho, much of Montana and the larger portions of Washington and Oregon, which constitute the Pacific Northwest; the third, the Intermountain Region of Wyoming, Utah and Colorado, and of those parts of Arizona and California that make the extreme Southwest.

"In striking contrast to the familiar conditions of the East, it may be said that upon the fate of these precious waters hangs the destiny of many millions of people who shall live in vast districts now mostly vacant and undeveloped, but certain in future to support a complex and far reaching economic life. By no possibility can these future millions escape the

dominating influence of these three great rivers and their systems of tributaries. It is not merely that the arid land cannot support human life without irrigation, and that the extent of this industry is, therefore, the necessary measure of settlement. The more important fact is that upon the manner of control under which irrigation shall do its work depends the industrial, social and political character of the institutions to be erected upon this indispensable foundation. The people will be bond, or free, tenants or proprietors; will coöperate in the orderly development and equitable distribution of the first necessity of their existence, or clash in the greedy struggle for its exclusive possession; will prosper or languish, create high conditions of social life, or lapse into semi-barbarism, in sure response to the manner in which the water supply is owned and administered. In the future life of the immense region which constitutes the true field for American expansion and domestic colonization, questions of tariff and currency and foreign dominion are as nothing compared to the overshadowing importance of the struggle for water and the social and economic problems to which it is inseparably related.

"The history of Eastern settlement and the experience of English-speaking men in other lands furnish little light for this problem of the West. It is a new question for our race and country, but its importance to the future of our civilization cannot be exaggerated, nor can it be longer ignored."

Sharing in the importance of this question is the problem of saving from waste and deterioration the forests on the mountains whence the waters of these rivers flow. Wherever questions of irrigation and of forest preservation have any significance they mingle and are inseparable.

Later when speaking of the Irrigation Congress Mr. Symthe reminds us of the work of the American Forestry Association. "Its (the Irrigation Congress's) most difficult task is to show the American people that there are distinctly two spheres of action. One of these the Western States must manage for themselves. They

must divest their institutions of old laws and customs, and make them over to fit their local conditions. They must grapple with the problem of reclaiming their lands and making them ready for the settlers of the future. But only the nation can legislate as to the forest, the grazing lands, and the many important streams which flow across State and national boundaries."

Endorsed by
National Business
League.

The Executive Committee of the National Business League endorsed the plans of the Irrigation Association at its meeting in Chicago on September 26th. Resolutions were drawn up in which the following were the four points dwelt upon:

"A trusteeship of all the public lands remaining by the government and a reservation of the same for actual settlers, with no grants to States or corporations for any purpose."

"The preservation of forests and the reforestation of denuded areas, for the preservation of existing water supplies."

"Federal storage reservoirs to conserve flood waters that now go to waste, as recommended in the Chittenden government report, under the established policy of river control."

"Reservoirs, dams and main-line canals, to be built by the government where necessary to reclaim the arid government lands."

It was resolved to send a copy of the resolutions to all the commercial organizations in the United States, and to ask for their endorsement and coöperation in securing for the policy the support of Senators and Congressmen. Among the local and national organizations that had already given the program of the Irrigation Association their support were the Commercial Club of St. Paul, the Chamber of Commerce of St. Paul, the Commercial Club of Omaha, the Missouri River Hardware Jobber's Association, the Trans-Mississippi Commercial Congress, the St. Louis Manufacturer's Association, the Na-

tional Board of Trade, the National Association of Merchants and Travellers, and the Missouri Press Association.

Stealing Wood
After a Fire.

In the *Revue des Eaux et Forêts* the following notice appeared some months ago:

"After several fires in the Montagne Noir comes the announcement of fire in the Landes, spreading from the region of Laborheyre and Parentis-en-Born to Mimizan over thousands of hectares of Pine lands. An innocent man amused himself burning the herbage in the midst of a country baked by the heat of dog days near forests of Pine. Hatred and ill-will incited criminal hands to imitate this example. The fire traversed thousands of hectares of forest, as in America, destroying everything in its way. It is astonishing, considering the slight attention accorded to the laws or restrictive regulations, that such disasters should not have occurred earlier



STEALING WOOD AFTER A FIRE IN THE LANDES.

during the great heat of August. At last it rains!"

Such a statement and such a picture surprises an American who has been taught

to believe that forest fires never occur in the Old World, and that everything in connection with the forests of Europe is as nearly perfect as is possible for human hands to make it.

The truth is, fires do occur in the Pine lands of France and often, as the note quoted above says "as in America." The cause of this fire was carelessness and the size of it was due to negligence in the care of firelanes.

This fire was a grand harvest for the natives who began at once to help themselves to the charred wood. The illustration shows a typical cart of the Landes. The roads are sandy so that the tires are wide. The mules have no harness except a bridle and leather collar. The collars fit in the wooden yoke to which they are firmly bound. The yoke is fastened to the end of the wagon tongue. This seems to be a cheap and efficient sort of rig for this level sandy country. It leaves the hind parts of the mules free to escape holes and stumps.

Forestry in Spain.

"On my way to Brazil, in 1882, I went through France and Spain, and was especially struck by the great contrast between those countries in respect to forests. It was a source of delight in France to see the lofty, crowded and splendid forests, and particularly on approaching the Pyrenees mountains, which separate the two countries, to observe how the thin, sandy soil, unfit for agriculture, was made to yield a good profit in Pine forest. On crossing into Spain, how great was the change! A vast area of hilly land was passed which once must have been covered with forest, but which then was naked and sterile. The Spaniards had cleared the forest from land that was only fit to bear forest, and had done nothing for its reproduction, just as we Americans have been doing for two centuries and are still doing. There was, apparently, the same ignorance of forestry in Spain that there is in this country.

"That I may not be thought prejudiced, I will state that I was attracted to the Spanish people. The Spaniards are behind in some things, because of their iso-

lated situation—off at one corner of Europe. They have not kept in touch with the most advanced countries, and this they show in a marked manner by their neglect of forestry."—C. C. Andrews, in *Forest Leaves*.

Forests and the New England Landscape.

"There are other matters relating to forests which I should not pass entirely by, although time forbids more than mere mention. For example, the relation of forests to the beauty of the landscape. This may seem like mere sentiment, but this too has a practical business side and in some portions of New England, it is the most practical of business matters. I spent two weeks last month on a little hill among the lakes of southern New Hampshire. It had formerly been merely a farming region and a poor one at that. Now it has become a favorite summering place because of its natural beauties. Bits of a rocky hillside, which a few years ago were not worth ten dollars per acre for either agriculture or timber, are now sold at fancy prices as sites for summer cottages. A couple of acres to-day are worth as much as the whole farm would bring thirty years ago for merely agricultural uses. But what would it be worth if the landscape was despoiled of its forest beauties? Strip the hillsides of their trees, let blackened stumps and straggling bushes adorn the despoiled slopes and what would the land then be worth? We often hear estimates made as to how much money is brought into this or that region by summer visitors from the cities. Do you know of any place inland in New England that attracts lovers of nature that is without woodlands? I do not.

"* * * A better knowledge and practice in the management of our woodlands is one of the factors in maintaining the prosperity of New England, of perpetuating its beauty and making its citizens cling to it with loving hearts.

"The beauty of New England is one of her natural resources, it is an important part of her capital and brings in a greater income in proportion to what it costs to maintain them than any other investment.

Even the beauties of the ocean are enhanced by a forest-clad shore. This may seem like a low view to take of nature's beauties, but inasmuch as woodlands are an essential feature in every beautiful landscape, I use it as another argument why forestry should interest us." Professor Wm. H. Brewer of Yale, before the Washington County (Conn.) Agricultural Society.

**Lumber Worth
More in the Trees.**

In his address at the recent meeting of the Michigan Hardwood Lumber Association, Mr. D. H. Day, the President, expressed his belief that the cutting in southern Michigan is excessive as follows:

"The hardwood lands from which we are getting our Maple, our principal wood, are fast being depleted. We have the best Maple in the world; I do not know where it is to come from when our stocks are gone. Under these circumstances it looks foolish to me that we should waste our patrimony, getting nothing for it, and deliberately destroying the 'goose that lays the golden egg.' Certainly, we all must do a reasonable amount of business to keep our plants in good shape and our localities employed, but there are gentlemen here whose mills cut from ten, twenty to thirty millions of hardwood. I say to these men especially, you are the ones to lead off in this movement. A reasonable reduction in such plants will have the desired effect. I do not say the smaller mills should not cooperate; they should; but, as I said before, we all want to keep in operation, and must cut a fair amount and do so at a reasonable price; but to these large plants—these night and day operators—I say, gentlemen, go slow; your lumber is worth more to you in the trees."

In commenting on this the *American Lumberman* said:

"A heedless activity in production is doubly dangerous in that it hazards present profits and unnecessarily sacrifices an asset which is growing more valuable every year. A certain rate of production must be maintained in order that there may be economy in manufacturing cost, but many mills are being crowded to their utmost

capacity when a distinct saving could be made by a more moderate rate of output. Doubtless there are many mills which would better shut down and pocket a definite present loss rather than an indefinite but larger prospective one.

"Conservatism is particularly important and certain to bring good results in the lower peninsula of Michigan because in that territory the timber is fast disappearing. The Maple timber of that district is probably the finest in the world, and it is as certain as anything can be that the trees will increase in value more rapidly than in size, and that both combined will handsomely pay for holding them. And yet the Maple producers are cutting them away as rapidly as possible and in excess of the market demands."

**Recent Canadian
Legislation.**

"The Ontario Government has passed an Order-in-Council requiring tanbark cut on Crown lands in Ontario to be consumed in the country. In other words, the exportation of tanbark cut upon the lands mentioned is prohibited. In taking this step the Government has adopted the policy urged upon them by the tanners of Ontario. These gentlemen waited upon the Provincial Cabinet some time ago and pressed for some measure that would restrict the shipment of tanbark from Ontario. They stated that the supply in the United States was limited compared with that in Ontario, and American tanners were supplying themselves from this Province and conserving their own resources. The run upon Ontario bark was therefore so great that it would exhaust the material in a short space of time unless a stop were put to the drain. Canadian tanbark, it is argued, is superior to the raw material used by tanners in any other part of the world, and if preserved for the use of the manufacturers of this country will enable them to turn out more finished products. The present Order-in-Council went into effect on May 1st, but does not affect tanbark on the lands of settlers.

"The usual methods of obtaining tanbark are so wasteful that any effort to check the waste should be heartily approved. In

general the bark is stripped from the tree, which is left to rot on the ground, useless itself, and in case of fire a menace to standing timber.—*Rod and Gun in Canada.*

New legislation was also passed providing for more effective prevention and suppression of fires on crown lands.—*Rod and Gun in Canada.*

REVIEW OF AMERICAN AND FOREIGN PERIODICAL LITERATURE.

The following is a list of the most important foreign journals of forestry which will be reviewed from time to time in this department: There are two Russian journals not mentioned below, also a Norwegian journal (*Tidsskrift for Skovbrug*). Other foreign journals such as *Det danske Hedeselskab*, a Danish periodical which treats of the cultivation of heatherlands, and *Tijdschrift der Nederlandsche Heidemaatschap*, a Dutch journal with the same purpose, are also not mentioned although they contain considerable forestry information.

The principal European journals of forestry are either in German, French, or English, with the exception of two. These two although seldom read outside of the countries in which they are printed are of interest for several reasons.

The first is the Danish journal called the *Tidsskrift for Skovvaesen*, edited by C. V. Prytz, professor of forestry in the Royal Agricultural and Forestry Academy in Copenhagen. It is unfortunate for outsiders that this journal is published in Danish, for the Danes are up-to-date, wide-awake foresters, and many things in the journal would be of interest to Americans. We shall endeavor to review this journal in future issues.

The second journal referred to is the Spanish one called *Revista de Montes*. The address is Calle del Duque de Alba, num 17 segundo en San Lorenzo de Escorial, Madrid. The cover of this journal is tastefully adorned with a Spanish coast scene showing to good advantage *Pinus pinea*, the classic Pine of the Mediterranean, which is a common accompaniment of old piazzas, fragments of temples, etc., in pictures.

Monte in Spanish means both "forest" and "mountain." Forests are no doubt so rare in the villages of Spain that forests and mountains have been so long unassociated that the terms are actually synonymous.

This reminds us of the Italian term "forestiere" which means a stranger, that is a man from the forest, and that of course means a man from another country, because of the scarcity of forests in Italy.

The Spanish journal is mainly a rehash of the contents of other European forestry journals. The fact that there is strong effort to support a journal of the kind in Spain is a surprise to most people who are not familiar with this publication.

One journal which is published in Bern, Switzerland, was, prior to 1900, printed in both French

and German; that is, the same article appeared both in French and in German in the same number. Two separate editions are now printed, one in each language. The German edition is known as the *Schweizerische Zeitschrift für Forstwesen*, and the French edition as the *Journal forestier Suisse*. This journal is the official organ of the Swiss Forestry Association. It is edited by Dr. F. Fankhauser who is one of the most distinguished foresters in Switzerland, if not in Europe, and one of the most genial of men. He is an expert in the reboisement of mountain districts and his journal always contains matters of wide interest.

Another journal which should be more extensively read is the *Bulletin de la Societe Centrale Forestiere de Belgique*, address, Secretariat de la Societe, 38 rue de Louvain, Brussels, Belgium. This is the best forestry journal in the French language.

There is a paper in France called *Le Bois*, another *L'Echo Forestier*, and a little journal called the *Bulletin Trimestriel de la Societe Forestiere Francaise des Amis Arbres*. The principal forestry journal of France, however, is the *Revue des Eaux et Forets*, 13 Rue des Saints Peres, Paris, France. Considering the fact that this is the only monthly forestry journal in a country which is supposed to be one of the leaders in the science and art of forestry, one pays well for the information which he gets out of it at the rate of twenty francs per year. Jules Rothschild, the publisher of this journal and of many French works on forestry, died in France last summer.

Germany is the land of forestry journals. I shall only mention in this connection the monthly publications, of which the principal ones are the *Allgemeine Forst- und Jagd-Zeitung*, edited by Dr. Tuisco Lorey, a professor of forestry in the University of Tübingen, and published at Frankfurt-am-Main by J. D. Sauerländer, and the *Zeitschrift für Forst- und Jagdwesen*. To the first of these journals there is a valuable supplement, which costs extra however, but contains a "review of the publications and important events in the spheres of forestry, forest botany, zoology, agricultural chemistry, and meteorology." All who cannot afford the journal should purchase the supplement. The *Zeitschrift für Forst- und Jagdwesen* is the official organ of the forestry experiment station at Eberswalde. It is edited by Dr. jur. B. Danckelmann, Royal Prussian "Landforst-meister"

and Director of the Forestry Academy at Eberswalde. It is of interest to note that the first mentioned German journal (*Forst- und Jagd-Zeitung*) is in its seventy-sixth year and the second mentioned is in its thirty-second year.

A journal in the German language called the *Centraltblatt für das gesamte Forstwesen* is published in Vienna. This is the official organ of the royal forestry experiment station. It is edited by Joseph Friedrich, Director of the forestry experiment station at Mariabrunn. It is published by Wilhelm Frick of Vienna.

In England there is no journal of forestry, although the *Indian Forester*, which is published in India, is a very valuable production. It is edited by J. W. Oliver, Conservator of Forests and Director of the Forest School at Dehra Dun. Valuable supplements are often attached to this journal (without extra cost) by forest officers in India, either descriptive of conditions in India, or resulting visits to the continent of Europe.

In addition to the above there are several very valuable English colonial periodicals which now and then contain articles relating to forestry. These journals are of special value to all students of tropical conditions. They are *The Agricultural Gazette* of New South Wales, Sydney; *The Tropical Agriculturist* of Colombia, Ceylon; *The Bulletin of the Botanical Department of Jamaica*, edited by Wm. Fawcett, Director of Public Gardens and Plantations. The last mentioned journal contains much that is applicable to both Cuba and Porto Rico.

Foresters should read with care the "Experiment Station Record" of the U. S. Department of Agriculture. This contains reviews of forestry articles, also reviews of articles on kindred subjects, of great value. This publication is a boon to the man who lacks time to read all the current literature in agricultural and allied subjects.

The *Swiss Journal of Forestry* announces the publication by the Department of the Interior of a "Tree Album of Switzerland" which contains twenty-five illustrations of the largest, most beautiful and most noteworthy trees in Switzerland. The motive of the publication is to encourage visits to these giant trees, to cultivate the appreciation of beautiful specimens and the desire to protect them. The descriptive text is in both French and German. The October number of the *Swiss Journal* gives a reproduction of one of these famous trees. It is a Mountain Maple of large size, 1,350 meters above sea level. Another interesting specimen is *Wellingtonia* (Sequoia) in Lugano, one of the largest in Switzerland and a striking example of extraordinary growth. It was planted only forty years ago and is already twenty-two meters high.

The *Queensland Agricultural Journal* for September contains a description and photograph of an interesting chopping contest at Bowen Park.

In Queensland the chop is usually made with a slanting upper cut and a horizontal lower cut. In New South Wales and Tasmania the upper and lower cuts are both slanting. This cut won and the reason is clear. Although it is at first more fatiguing to make a slanting under cut the axe penetrates deeper. It was an exciting and interesting contest which might be practiced to advantage in this country.*

I might also add that the second system is better than the first for another reason: it leaves the stump with a roof shaped top which is of great advantage in the case of reproduction by coppice. Water does not collect on the top of the stump, and decay is therefore longer in beginning.

A series of six articles on "The Forests of Java and their Management," by Forstassessor Seibb of Heissenstein, has been appearing in the *Allgemeine Forst- und Jagd-Zeitung*. These articles should be of special interest to Americans, because of the similarity of the conditions to those which exist in the Philippines. Now that the Government has a forestry bureau in Manila and that efforts are being directed toward the proper exploitation of the rich woodlands of our new Eastern possessions, we should study with great care the work of the Dutch in Java and profit by their mistakes as well as by their successes. Americans should emulate the Dutch and English and have somewhere in the tropics an extensive Botanic Garden where northern students may go for study.

The writer of these articles, Mr. Seibb, served five years as a forester in Java.

The Island of Java is generally considered the most beautiful, richest and best cultivated of Holland's vast colonial possessions. One-fifth of the island or about 2,500,000 hectares is in forest at all degrees of altitude even reaching to the tops of most of the volcanoes.

Tertiary limestone and lime sandstone forms the geological foundation of the island, running from east to west in the form of a mountain chain about 1,000 meters in height. The soil is alluvial along the flat shores of the sea bays and rivers. There are forty-four volcanoes. The rivers and streams flow down steep declivities into gorges and beautiful valleys.

Owing to the fact that it is a long island the heat is moderated by the sea breezes. There are two distinct seasons—dry during the East monsoon from April to November, and wet during the west monsoon the rest of the year. In the dry season there is a continuous blue sky with dew at night. In the wet season the west monsoon brings torrents of rain. As one ascends a volcano the air becomes thinner and the sun's rays more intense. Under such conditions there is naturally produced a great variety and a great luxuriance of vegetable growth. At about 500 meters above sea level the great

* Such contests are held in Canada, and in at any rate one of the United States—Washington.—Ed.

timber tree of Java, *Tectona grandis*, commonly called Teak, forms large stands in company with bread fruit and numerous species of the genus *Ficus*. The higher one goes the more similar to European types the vegetation becomes until even Oaks, Chestnuts and Maples are reached. The *Casuarina* and *Podocarpus cupressia* remind one of northern conifers. The highest regions above the clouds show stunted trees, *Vaccinium*, *Myrica*, *Ranunculus*, *Geranium*, etc. There are 75 families of forest trees, over 200 genera, and over 800 species. For several years a botanical specialist has been engaged in studying the sylvia of Java.

The Dutch government very early realized the great importance of forests to Java. Here there is little doubt that they exercise a great influence on the climate, and in preventing floods. In 1890 the forests in the high mountains were proclaimed protection forests. As early as 1880 reforestation on a large scale began on the sides of certain volcanoes, the forests of which had been devastated by the natives.

Of all the varied forest products of Java, Teak wood is the most important. It is used in ship construction, cabinet work, wagon construction, railroad ties, bridges and pavements. The Chinese while still living make their own coffins out of it. It is one of the hottest of fuel woods and produces good charcoal.

The natives who were driven out of trade by more intelligent emigrants of Buddhist and Brahman descent, and later Mahomedan, adopted agriculture as a profession and cherished their rights to the forests. Although the soil is of fabulous fertility and although it has produced millions of dollars worth of chocolate, coffee and tobacco, the time comes when it must return to forest in order to gain the humus which is essential to the successful production of these crops.

In spite of government regulations there were of course, in consequence, robbery and illegal land clearing. The native is a valuable laborer and even a good leader. His senses are sharp and he knows the forest. The interests of the Japanese forests are centered in Teak because of its great usefulness and abundance. This tree belongs to the Vervain family. Its nearest relative in this country is the *Verbena*. With the beginning of the rainy season it begins to blossom. The flowers open gradually from October to May. The seeds ripen in July and germinate the following rainy season. The tree has enormous leaves and the crown varies in shape according to the situation in which it grows. It loses most of its leaves during the dry season. This depends upon the quality of the soil and the exposure. The tap root dies when the tree is in the pole stage. The root system adapts itself to the position the tree occupies. It finds a sure footing even in very thin soil. The stem up to the age of four years is square but becomes round later. The wood is distinguished from most other tropical woods by the sharply defined rings.

At eighty years the tree yields very useful

timber. It is a light demander but in youth endures some shade. A closed Teak forest does not fulfill one's ideal of a tropical forest. Its dense shade in the rainy season and sudden almost complete loss of foliage in the dry season do not favor the growth of underbrush. The seeds and superficial roots are frequently burnt over in dry seasons so that the forest floor is swept clean.

There were fears of Teak exhaustion as early as the second half of the eighteenth century. When Java became a Dutch possession the exploitation of Teak became a State monopoly. Although well meant these restrictions failed and the woods were plundered to supply the sugar, indigo and tobacco plantations with wood. The government itself used immense quantities of choice timber in an extravagant and wasteful manner of culling. Things went from bad to worse. Forced labor was abolished and new methods were finally adopted.

Then surveying, mapping and road-making began. Parcels are consecutively cut as roads and bridges are built. The whole is done according to a comprehensive plan to ensure the continuity of the Teak supply. The woods are exploited with the aid of private industry under the supervision of the government.

In this work the ax is used exclusively. This must be a clumsy implement in that the head of iron is fastened to the handle with leather thongs. The logs are sawn into planks by hand. In Java every man is his own builder and labor is cheap. Sawmills however will come in time.

The process of cultivation is what the Germans call "waldfeldbau," a combination of forestry and agriculture. The Teak seeds are planted in rows three meters apart at the beginning of the wet monsoon when the soil is wet and soft. Then the soil between the rows is worked and sown to field crops. The superfluous plants are weeded out and the earth is heaped up around the plants, and several field crops are grown between the rows for a period of 18 or 20 months until the Teak reaches a height of five meters, when it is left to its fate.

The natives who do the work are allowed all the field produce, which is usually corn or rice, and a premium of about 35 florins per hectare on condition that they furnish all seed for the crops. This is payable however in proportion to the growth and prosperity of the Teak.

Fires are not uncommon. Heavy rainfall is injurious, and often lightning causes whole groups of trees to sicken and die.

The wonderful development of Java which is still undeveloped and under populated, in spite of her 20,000,000 of people and of the hundreds of fortunes which she has already produced, gives one an idea of the almost limitless possibilities of a fertile country in the torrid zone, where nature is most lavish with her gifts. It reassures us of the wisdom of acquiring lands in such regions where the main difficulty is malarial fever which we hope the doctors may at any moment devise a means of completely con-

trolling. The discovery of the use of the bark of the Cinchona tree as a febrifuge has already made possible the exploration of these tropical

wildernesses. Further discoveries in this line we hope will soon completely remove this troublesome barrier. J. G.

RECENT PUBLICATIONS.

Forest and Water. By Abbot Kinney, with articles on allied subjects by eminent experts. Pages 247. Illustrations from photographs, 53. The Post Publishing Co., Los Angeles, California.

The appearance of a book on any of the many problems in American forestry must necessarily attract the attention of many thoughtful Americans. There never was a time when so much attention was given to forest matters in this country as now. Moreover, interest in our forests looking forward to their conservation and practical management is increasing rapidly. There is much need for good books on forestry, more particularly in its application to the conditions existing in this country.

Mr. Kinney in "Forest and Water" has given us a large amount of information regarding the mountain forests of southern California in their relation to water conservation, much of which it is to our interest to know. Unfortunately, however, very little of the text bearing upon this important question is substantiated by actual experiments or measurements.

As a whole the book is given to the cause of agitation in the interests of forest preservation. It is founded upon observation rather than experimentation. It consists for the most part of a series of more or less independent essays on forest protection, water supply and irrigation in southern California and of a brief descriptive account of the more important forest trees of that region. Considerable space, however, is given to an account of how, in the author's opinion, the present management of the forests of the southwest can be improved.

Like many of the reports of commissions, horticultural societies, and associations, that have published bulletins on forestry in this country, "Forest and Water" has its place in convincing the public that forest protection is necessary.

Mr. Kinney is the author of something less than two-thirds of the book, nine chapters being supplied by as many different writers. These chapters deal with the following subjects: Fish and Game of the Forest Reserves, Some Relations between Forests and Water Supply, Practical Irrigation, Irrigation in the Southwest, The Underground Waters of Southern California, Forest Reservoirs, Relation of Stream Flow and Suspended Sediment Therein to the Covering of Drainage Basins, and The Reclamation of Drifting Sand Dunes in Golden Gate Park.

Of these independent papers by other authors the work of J. B. Lippincott demands special attention, as he has given us in his short paper

the results of actual measurements and experiments in showing the relation of stream flow and suspended sediment to the covering of drainage basins.

In a book of this nature intended to instruct the public on an important economic problem, the greatest attention should be given to accuracy in the presentation of facts and to precision in expression. In discussing the effect of forests on rain fall on p. 23, the author says: "This is still an open question," while a few pages later, viz., on p. 35 it is stated that "the certain diminution of rain fall, following the destruction of forest covering, means the failure of crops."

In the table of contents we notice the expression: "Trees and the Pines." Careless and meaningless expressions of this sort are unfortunate, particularly so when they are given as headings of chapters.

In the opinion of the reviewer such positive statements as the following require qualifications: "There is no possible excuse for fires in our mountains" (page 36); "Torrents are only found where mountainous watersheds are in part or wholly without adequate covering of forests" (page 93).

Digressions, some of which are of a semi-political nature occur at not infrequent intervals and detract from rather than add to the book. For instance, on p. 77 we find the following: "Those who engage in promoting this great work have strenuous efforts before them; they deserve the garlands of reward as civic patriots as much or more than those who foment distant foreign wars."

The chapters dealing with supplies and dietary deserve special mention. The photographic reproductions are good as a rule. Those illustrating forest fires are exceptionally fine. A few, as those on p. 88, are foreign to the text and add nothing to its value.

Although the book shows no well defined plan of conception and execution and is entirely without unity, it contains a large fund of information, derived largely from observation, in regard to the water and forests of the mountains of southern California and should be read by all persons interested in the forest problems of the southwest. J. W. T.

Some Business Problems of American Forestry. C. A. Schenck, Ph.D. French Broad Press, Asheville, N. C. Pages 26. \$1.00.

The wording of the above title and the form and appearance of the "Seventeen Problems of American Forestry" contained in this little book would at first lead the reader to believe that

here forestry shows what it can do with questions that are now actually vexing lumbermen in the Yellow Poplar region, Oregon, the Adirondacks, and other places. The precise and simple way in which the problems are stated and worked out will doubtless come like a revelation to some readers, and shows well in what way accurate calculations in regard to the forest crop can be made under certain conditions. Unfortunately, however, for the effect of the book the conditions which Dr. Schenck has assumed in these examples are often not those which exist in the very real world of the lumber regions. It is for this reason that many of the calculations lose all interest except that which used to attach to the feats of the famous swimmer X. who, in the school algebra, was wont to race the steamboat Y against a current 20; for after all equations have probably been used for calculation on even modest lumber operations and their appearance in forestry is nothing new.

The Red Fir problem is a case in point. It is based on the supposition that 200,000 acres of "splendid Douglas Fir" in the Cascade backwoods are purchased for \$0.40 an acre. The regular price for good Fir land, however, is nearer \$3 an acre.

Another example in which a premise is entirely at variance with the existing state of things is on page 20, where it is assumed as a basis for calculation that in the southern Alleghenies nature can restore a burned forest to its former value and productiveness in twenty years.

Again, in the first Yellow Poplar problem Dr. Schenck bases his calculations on assumptions which quite disagree with the habits of growth of the tree. He generalizes about its rate of growth as if the trees now standing in North Carolina were found in pure stands and had been planted and cared for from earliest youth as scientifically as any forest in Germany. As a matter of fact however, Yellow Poplars stand singly, or in scattered groups, and grow under such different conditions that generalizations like those made on page 10 would be unsafe even if based on thousands of measurements. Dr. Schneck of course knows this and it seems therefore as if he might better have used a plantation of White Pine, say, to illustrate the sort of calculation here exemplified.

It may seem unnecessary to find fault with these problems on such grounds, but they will attract the attention chiefly of people who judge the forester by the way in which he grasps their difficulties; and the extent to which they have already been quoted in lumber journals shows that, whether Dr. Schenck meant them to be or not, they are accepted as what might be called "a forester's solution of some representative problems."

The Second Biennial Report of the New Hampshire Forestry Commission.

The reviewer labors under the great difficulty of finding nothing in this report to review. But

considering New Hampshire's needs in the way of forest protection and better care of her woodlands, considering that one is now hearing from many quarters complaints of no uncertain tone about the neglected state of her forest interests, and considering finally that the report is supposed to cover a period of two years, this is certainly worth noting. Twenty of the twenty-four pages which the Secretary of the Commission has managed to fill are devoted to reprints of two circulars published some time ago by the United States Department of Agriculture, and by selections from one of the previous New Hampshire Reports and from State laws. All these are doubtless interesting and worthy of being reprinted, but one would prefer to find in their stead something relating definitely to New Hampshire. As it is, the only information which one carries away from a perusal of the well-bound little pamphlet is that the Commission has made "numerous contributions to newspapers and periodicals" and has given lectures and addresses; and further that "Perhaps the most active agency in the dissemination of forestry intelligence in New Hampshire at present is the State Federation of Women's Clubs."

Insects Injurious to Forests. By E. P. Felt, D.Sc., State Entomologist. Extract from the Fourth Annual Report of the N. Y. Commissioners of Fisheries, Game and Forests. Pp. 31, colored plates 3, figures and illustrations from photographs.

On account of the necessary differences in methods of controlling insects in the forest and on shade trees, this report confines itself to insects which are injurious to shade trees, and chiefly among these to the Maples. But some of these insects are as much to be feared in the forests as in city parks. For the owners of Maple orchards especially, there are many valuable hints in this report.

BOOKS RECEIVED.

The Slave Trade in Foreign Countries. Special Consular Reports, vol. XX., part III.

School Gardens in Europe. Special Consular Reports, vol. XX., part II.

Two Diseases of Red Cedar. Caused by *Polyporus juniperous* n. sp. and *Polyporus Carneus* Nees. A preliminary report. By Hermann von Schrenk. Pp. 22, pls. 7, figs. 3. Bulletin No. 21, Division of Vegetable Physiology and Pathologie of the Department of Agriculture. Price, 10 cents.

Annual Report of the Commissioner of the Land Office (Department of the Interior) for the year ended June 30, 1900.

(To be reviewed next month.)

Report of the Royal Commission on Forestry Protection in Ontario.

(To be reviewed next month.)

"A Weekly Feast to Nourish Hungry Minds."—*N. Y. Evangelist.*

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